

**REMARKS**

As a preliminary matter, the Examiner has objected to the drawings as not being of sufficient quality to permit examination. As explained above, Applicant has herewith submitted Replacement Sheets with clearer drawings. Accordingly, Applicant respectfully asserts that the drawings are now in appropriate form. Therefore, Applicant respectfully requests Examiner withdraw the objection to the drawings.

Examiner objects to Claims 18-31 in general, asserting that it is unclear whether the sub-steps/structures are critical to the inventive concept or just provide additional additive information. In addition, the Examiner has rejected Claims 18-31 under 35 U.S.C. § 112, second paragraph, as being indefinite. The Examiner has also rejected Claims 18-34 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps. In addition, the Examiner has also rejected Claims 28 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements.

Examiner has also rejected Claims 18-22, 24-29, and 31-34 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,394,999 to Williams et al. ("Williams"). In addition, the Examiner has rejected Claims 23 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Williams in view of the article to Carlos E. Martinez et al., "Effect of Pupillary Dilation on Corneal Optical Aberrations After Photorefractive Keratectomy", Archives of Ophthalmology, Vol. 116, PP. 1053-1062 (August 1998) ("Martinez").

Independent Claim 18 stands currently amended to include the language from Claims 19 and 21, and Claims 19 and 21 stand currently canceled. Independent Claim 25 stands currently amended to include the language from Claims 26 and 28, and Claims 26 and 28 stand currently canceled. Claims 20, 22, 23, 27, 29, 30, and 32-34 also stand currently amended. Claims 32-34 are temporarily withdrawn pending Examiner's review of the above referenced claim amendments. Claims 1-17 stand previously canceled.

Claims 18, 20, 22-25, 27, and 30-34 are currently pending. The following remarks are considered by applicant to overcome each of the Examiner's outstanding rejections to current Claims 18, 20, 22-25, 27, and 30-31. An early Notice of Allowance is therefore requested.

**I. SUMMARY OF RELEVANT LAW**

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The determination of obviousness rests on whether the claimed invention as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. In determining obviousness, four factors should be weighed: (1) the scope and content of the prior art, (2) the differences between the art and the claims at issue, (3) the level of ordinary skill in the art, and (4) whatever objective evidence may be present. Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor. The Examiner carries the burden under 35 U.S.C. § 103 to establish a prima facie case of obviousness and must show that the references relied on teach or suggest all of the limitations of the claims.

**II. OBJECTIONS TO CLAIMS 18, 20, 22-25, 27, AND 30-31 IN GENERAL AS BEING UNCLEAR**

On page 2 of the current Office Action, the Examiner objects to Claims 18, 20, 22-25, 27, and 30-31 in general, asserting that it is unclear whether the sub-steps/structures are critical to the inventive concept or just provide additional additive information. These objections are respectfully traversed and believed overcome in view of the following discussion.

The sub-steps/sub-structures of Claims 18, 20, 22-25, 27, and 30-31 clearly further define the scope of the invention of the claims. As such, the number of these sub-steps/sub-structures (e.g., “a”, “a1”, “b”, etc.) is abundantly clear.

Accordingly, Applicant respectfully asserts that the sub-steps/sub-structures of Claims 18, 20, 22-25, 27, and 30-31 clarify the scope of each of the claims, and are thus **not** unclear. Therefore, Applicant respectfully requests Examiner withdraw the objection to Claims 18, 20, 22-25, 27, and 30-31.

**III. REJECTION OF CLAIMS 18, 20, 22-25, 27, AND 30-31 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH**

On page 3 of the current Office Action, the Examiner rejects Claims 18, 20, 22-25, 27, and 30-31 under 35 U.S.C. § 112, second paragraph, as being indefinite. These rejections are respectfully traversed and believed overcome in view of the following discussion.

**A. Claims 18, 20, and 22-24**

Examiner asserts that it is unclear whether the claims refer to treating presbyopia or other visual defects. However, the claims clearly state that they relate to treating presbyopia. In addition, an aberrometric map of the eye indicating the visual defects of the eye is acquired and interpreted. These visual defects which are indicated include second-order visual defects including hypermetropia, astigmatism and myopia, and higher-order visual defects including spherical aberration. As such, Claims 18, 20, and 22-24 are abundantly clear.

Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of indefiniteness of Claims 18, 20, and 22-24. Therefore, Applicant respectfully requests Examiner withdraw the rejection of Claims 18, 20, and 22-24 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**B. Claims 23 and 30 – Definition of Defect**

Examiner asserts that it is unclear what is the definition of “defect”. Claims 18 and 25 (from which Claims 23 and 30 respectively depend) has been amended to include language from Claims 21 and 28 respectively, which states that the visual defects comprising second-order visual defects including hypermetropia, astigmatism and myopia, and higher-order visual defects including spherical aberration. As such, “visual defects”, as used in Claims 23 and 30, is now defined.

Accordingly, Applicant respectfully asserts that Examiner Claims 23 and 30 are not indefinite. Therefore, Applicant respectfully requests Examiner withdraw the rejection of Claims 23 and 30 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**C. Claims 23 and 30 – Zernike Coefficients**

Examiner asserts that it is unclear how to interpret Zernike coefficients, as they are dependent upon pupil diameters of the eye. However, as explained in the current Application:

“In ophthalmology, aberration is **commonly measured** using **Zernike’s polynomials**, which give a mathematical presentation of the aberrant wavefront as the sum of coefficient-weighted elementary functions, i.e. geometrical figures expressed as polynomials as a function of  $(x, y)$ .

“**The reason for this choice lies in Zernike’s polynomials being commonly used to describe aberrations in optical systems.**” Application, ¶¶ [0021] and [0022] (emphasis added).

In other words, Zernike’s polynomials are **commonly understood by one of ordinary skill in the art** based on the current state of the art. As such, even if Zernike coefficients are dependent upon pupil diameters of the eye, one of ordinary skill in the art would understand the use of Zernike’s polynomials in Claims 23 and 30. Thus, the use of Zernike’s polynomials in Claims 23 and 30 does not render these claims indefinite.

Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of indefiniteness of Claims 23 and 30. Therefore, Applicant respectfully requests Examiner withdraw the rejection of Claims 23 and 30 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**D. Claim 31**

Examiner asserts that it is unclear why there is a need for a second control means for correcting higher order aberrations after inducing a 4<sup>th</sup> order aberration. As stated in Claim 24, one additional step in the method of Claim 18 is to control the excimer laser unit to form on the cornea a photoablative pattern which **also corrects higher order aberrations**. Claim 31 is the corresponding claim in the set of product claims. As such, Claim 31 specifies that there is a second control means which controls the excimer laser unit to form on the cornea a photoablative pattern which also corrects higher-order aberrations. As such, Applicant respectfully asserts that it is clear why a second control means is provided in Claim 31.

Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of indefiniteness of Claim 31. Therefore, Applicant respectfully requests Examiner withdraw the rejection of Claim 31 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**E. Claim 21(a4) (now Claim 18)**

Examiner asserts that the phrase “so generated” in Claim 21 at a4 (now Claim 18 at a4) lacks antecedent basis. This phrase has been deleted from Claim 18. Accordingly, Applicant respectfully asserts that Claim 18 is now in acceptable form. Therefore, Applicant respectfully requests that Examiner withdraw the rejection of Claim 18 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**F. Claim 30(c1)**

Examiner asserts that the phrases “maximum 6 mm inside diameter” and “maximum 9 mm outside diameter” in Claim 30 at c1 lacks antecedent basis. These phrases have been amended so as to provide proper antecedent basis. Accordingly, Applicant respectfully asserts that Claim 30 is now in acceptable form. Therefore, Applicant respectfully requests that Examiner withdraw the rejection of Claim 30 under 35 U.S.C. § 112, second paragraph, as being indefinite.

**IV. REJECTION OF CLAIMS 18, 20, 22-25, 27, AND 30-31 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH**

On page 4 of the current Office Action, the Examiner rejects Claims 18, 20, 22-25, 27, and 30-31 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps. These rejections are respectfully traversed and believed overcome in view of the following discussion.

As an initial matter, Applicant notes that Claims 18, 20, 22-24 are method claims with steps, while Claims 25, 27, and 30-31 are **product** claims. In addition, all of Examiners specific claim rejections relate to the method Claims 18, 20, 22-24, and **not** to the product Claims 25, 27, and 30-31. As such, Applicants respectfully assert that the Examiner’s inclusion of Claims 25, 27, and 30-31 seems to have been made in error.

*Therefore, Applicants respectfully request that Claims 25, 27, and 30-31 be removed from any maintenance of the current rejection in a subsequent Office Action.*

As discussed above, Claim 18 has been amended to include that language of claims 19 and 21. In addition, Claim 18 has been amended to state, in part:

“acquiring **and interpreting** an aberrometric map of the eye indicating the visual defects of the eye...”  
(emphasis added).

As such, Applicant respectfully asserts that Claim 18 now includes the necessary steps, as do Claims 18, 20, and 22-24 since they ultimately depend from Claim 18. Therefore, Applicant respectfully requests that Examiner withdraw the rejection of Claims 18, 20, and 22-24 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps.

**V. REJECTION OF CLAIM 28 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH**

On page 4 of the current Office Action, the Examiner rejects Claim 28 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements. This rejection is respectfully traversed and believed overcome in view of the following discussion.

Also as discussed above, 25 has been amended to include that language of claims 26 and 28. In addition, Claim 25 has been amended to state, in part:

“aberrometric measuring **means** for acquiring **and interpreting** an aberrometric map of the eye indicating the visual defects of the eye...” (emphasis added).

As such, Applicant respectfully asserts that Claim 25 now includes the necessary elements. Therefore, Applicant respectfully requests that Examiner withdraw the rejection of Claim 30 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements.

**VI. REJECTION OF CLAIMS 18, 20, 22, 24, 25, 27, 29, AND 31 UNDER 35**  
**U.S.C. § 102(B) BASED ON WILLIAMS**

On page 5 of the current Office Action, the Examiner rejects Claims 18-22, 24-29, and 31 under 35 U.S.C. § 102(b) as being anticipated by Williams. These rejections are respectfully traversed and believed overcome in view of the following discussion.

**A. Claims 18, 20, 22, and 24**

Independent Claim 18 states, in part:

“a) controlling said excimer laser unit to produce on the cornea a photoablative pattern **inducing a fourth-order ocular aberration....**” (emphasis added).

As such, the method of Claim 18 actually **induces** a fourth-order ocular aberration. Examiner asserts that Williams discloses the above language of Claim 18. This, however, misinterprets the teachings of Williams.

In particular, Williams states:

“The corneal topography approach has a drawback in that **only measurements of the cornea are used**. However, the eye is a complex optical system of which the cornea is **only one component**. Thus, even corneal topography information when combined with the current FDA-approved refraction equation, is **not capable of suggesting what correction must be made to the corneal shape in order to optimally correct the overall aberration of the eye’s optical system**.

“There have been several recent approaches to the above problems. First, by **expanding the mathematical equations** for refraction correction **to include higher order effects**, coma (3<sup>rd</sup> order) and **spherical (4<sup>th</sup> order) aberrations can be reduced**. See C. E. Martinez, R. A. Applegate, H. C. Howland, S. D. Klyce, M. B. McDonald, and J. P. Medina, ‘Changes in corneal aberration structure after photorefractive keratectomy,’ Invest. Ophthalmol. Visual Sci. Suppl. 37, 933 (1996). Second, **by improving schematic model eyes to include higher order aberrations, these new models can provide insight into how the various elements of the eye optical system correlate to affect visual performance**.  
.....

“It is therefore an object of the invention to provide a system and method for laser ablation or reshaping of the eye which considers higher order aberrations of the eye.”

Williams, Col. 2, Ln. 66 – Col. 3, Ln. 18; Col. 3, Lns. 40–43 (emphasis added).

As such, the system and method of Williams merely **considers** higher order aberrations of the eye so that spherical (4<sup>th</sup> order) aberrations **can be reduced**. Nowhere does Williams ever teach or suggest that a fourth-order ocular aberration should be **induced**, as stated in Claim 18. Thus, Williams fails to disclose this language of Claim 18.

Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of anticipation of independent Claim 18, and corresponding Claims 20, 22, and 24 because they are all ultimately dependant from independent Claim 18. Therefore, Applicant respectfully requests that Examiner remove the rejection of Claims 18, 20, 22, and 24 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,394,999 to Williams et al.

**B. Claims 25, 27, 29, and 31**

Similarly to Claim 18, independent Claim 25 states, in part:

“a) first control means for controlling said excimer laser unit to form on the cornea a photoablative pattern **inducing a fourth-order ocular aberration...**”  
(emphasis added).

As such, Claim 25 requires that the excimer laser actually **induces** a fourth-order ocular aberration. As discussed above in relation to Claim 18, Williams **fails** to disclose an excimer laser which actually **induces** of a fourth-order ocular aberration. As such, Williams **fails** to disclose the above language of Claim 25.

Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of anticipation of independent Claim 25, and corresponding Claims 27, 29, and 31 because they are all ultimately dependant from independent Claim 25. Therefore, Applicant respectfully requests that Examiner remove the rejection of Claims 25, 27, 29, and 31 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,394,999 to Williams et al.



**VII. REJECTION OF CLAIMS 23 AND 30 UNDER 35 U.S.C. § 102(B) BASED ON WILLIAMS**

On page 7 of the current Office Action, the Examiner rejects Claims 23 and 30 under 35 U.S.C. § 102(a) as being unpatentable over Williams in view of Martinez. These rejections are respectfully traversed and believed overcome in view of the following discussion.

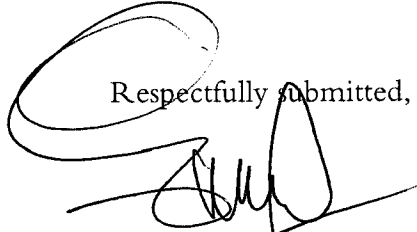
Claim 23 is ultimately dependent from independent Claim 18, and Claim 30 is ultimately dependent from independent Claim 25. As Claims 18 and 35 are allowable, so must be Claims 23 and 30. Accordingly, Applicant respectfully asserts that Examiner has failed to establish a prima facie case of obviousness of Claims 23 and 30. Therefore, Applicant respectfully requests that Examiner remove the rejection of Claims 23 and 30 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,394,999 to Williams et al. in view of the article to Carlos E. Martinez et al., "Effect of Pupillary Dilation on Corneal Optical Aberrations After Photorefractive Keratectomy", Archives of Ophthalmology, Vol. 116, PP. 1053-1062 (August 1998).

Electronically Filed

Serial No.: 10/535,617  
Atty. Docket No.: 500343.20300

Based upon the above remarks, Applicant respectfully requests reconsideration of this application and its early allowance. Should the Examiner feel that a telephone conference with Applicant's attorney would expedite the prosecution of this application, the Examiner is urged to contact him at the number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'Eugene LeDonne', written over a horizontal line.

Eugene LeDonne – Reg. No. 35,930  
Joseph W. Treloar – Reg. No. 60,975  
REEDSMITH LLP  
599 Lexington Avenue  
New York, NY 10022  
Tel.: 212.521.5400

EL:JWT

500343.20300